

WHAT IS CLAIMED IS:

1. An H-bridge driver for driving an electrical load; said H-bridge driver comprising first and second high side MOSFETs and first and second low side MOSFETs; each of said MOSFETs having respective drain, source and control electrodes; the drain electrodes of said high side MOSFETs and the source electrodes of said low side MOSFETs connected to power input terminals; the source electrodes of said first and second high side MOSFETs connected to the drain electrodes of said first and second low side electrodes respectively at first and second nodes which define output bridge terminals; a control IC for controlling the operation of said high side and low side MOSFETs; said control IC having input terminals connectable to receive input control signals from an exterior bridge control circuit and having output terminals connected to said control electrodes of said high side MOSFETs; a support for supporting said first and second high side MOSFETs and said IC; and a common insulation housing enclosing said first and second high side MOSFETs and said IC; and connection pins extending from said housing; said first and second high side MOSFETs comprising intelligent power switches and have output terminals with signals related to the switch current and to the MOSFET die temperature; said output terminals coupled to said IC producing an output signal to said microcontroller for shut down of said H-bridge when either current or die temperature exceed a given value.

2. An H-bridge driver for driving an electrical load; said H-bridge driver comprising first and second high side MOSFETs and first and second low side MOSFETs; each of said MOSFETs having respective drain, source and control electrodes; the drain electrodes of said high side MOSFETs and the source electrodes of said low side MOSFETs connected to power input terminals; the source electrodes

of said first and second high side MOSFETs connected to the drain electrodes of said first and second low side electrodes respectively at first and second nodes which define output bridge terminals; a control IC for controlling the operation of said high side and low side MOSFETs; said control IC having input terminals connectable to receive input control signals from an exterior bridge control circuit and having output terminals connected to said control electrodes of said high side MOSFETs; a support for supporting said first and second high side MOSFETs and said IC; and a common insulation housing enclosing said first and second high side MOSFETs and said IC; and connection pins extending from said housing; said connection pins including IN1 and IN2 pins coupled to the respective control electrodes of said first and second high side MOSFETs, a V_{cc} pin and a GND pin connected to said power input terminals, and M1 and M2 pins connected to said first and second nodes respectively.

3. An H-bridge driver for driving an electrical load; said H-bridge driver comprising first and second high side MOSFETs and first and second low side MOSFETs; each of said MOSFETs having respective drain, source and control electrodes; the drain electrodes of said high side MOSFETs and the source electrodes of said low side MOSFETs connected to power input terminals; the source electrodes of said first and second high side MOSFETs connected to the drain electrodes of said first and second low side electrodes respectively at first and second nodes which define output bridge terminals; a control IC for controlling the operation of said high side and low side MOSFETs; said control IC having input terminals connectable to receive input control signals from an exterior bridge control circuit and having output terminals connected to said control electrodes of said high side MOSFETs; a support for supporting said first and second high side MOSFETs and said IC; and a common insulation housing enclosing said first and second high side MOSFETs and said IC;

and connection pins extending from said housing; said low side MOSFETs both being normally ON.

4. The device of claim 3, which further includes a shoot-thru prevention circuit in said IC for turning on said first or second low side device in response to the turn off of said first or second high side MOSFET respectively, and when said first or second high side MOSFET output reaches a given low voltage value compared to its full output voltage.

5. An H-bridge driver for driving an electrical load; said H-bridge driver comprising first and second high side MOSFETs and first and second low side MOSFETs; each of said MOSFETs having respective drain, source and control electrodes; the drain electrodes of said high side MOSFETs and the source electrodes of said low side MOSFETs connected to power input terminals; the source electrodes of said first and second high side MOSFETs connected to the drain electrodes of said first and second low side electrodes respectively at first and second nodes which define output bridge terminals; a control IC for controlling the operation of said high side and low side MOSFETs; said control IC having input terminals connectable to receive input control signals from an exterior bridge control circuit and having output terminals connected to said control electrodes of said high side MOSFETs; a support for supporting said first and second high side MOSFETs and said IC; and a common insulation housing enclosing said first and second high side MOSFETs and said IC; and connection pins extending from said housing; said IC including a PWM generator for applying a soft start PWM signal to said control electrodes of said low side MOSFETs.

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6. The device of claim 5, wherein said low side MOSFETs are normally ON.

7. The device of claim 6, which further includes a shoot-thru prevention circuit in said IC for turning on said first or second low side device in response to the turn off of said first or second high side MOSFET respectively, when said first or second high side MOSFET output reaches a given low voltage value compared to its full output voltage.

8. The H-bridge driver of claim 7, wherein said first and second high side MOSFETs are intelligent power switches and have output terminals with signals related to the switch current and to the MOSFET die temperature; said output terminals coupled to said IC producing an output signal to said microcontroller for shut down of said H-bridge when either current or die temperature exceed a given value.

9. The H-bridge driver of claim 8, wherein said first and second high side MOSFETs are intelligent power switches and have output terminals with signals related to the switch current and to the MOSFET die temperature; said output terminals coupled to said IC producing an output signal to said microcontroller for shut down of said H-bridge when either current or die temperature exceed a given value; said connection pins including a DG pin connected to said output signal produced by IC responsive to excessive die temperature or current.

10. The device of claim 2, wherein said low side MOSFETs are normally ON.

11. The device of claim 10, which further includes a shoot-thru prevention circuit in said IC for turning on said first or second low side in response to the turn off of said first or second high side MOSFET respectively, when said first or second high side MOSFET output reaches a given low voltage value compared to its full output voltage.

12. The device of claim 2, wherein said IC includes a PWM generator for applying a soft start PWM signal to said control electrodes of said low side MOSFETs.

13. The device of claim 5, wherein said low side MOSFETs are normally ON.

14. The H-bridge driver of claim 5, which further includes an external RC circuit connected to said IC for controlling the duty cycle of said soft start circuit.

15. The H-bridge driver of claim 6, which further includes an external RC circuit connected to said IC for controlling the duty cycle of said soft start circuit.

16. The H-bridge driver of claim 14, wherein said connection pins include a V_{RC} pin connected to one end of the resistor of said RC circuit, an SS pin connected to the node between the resistor and capacitor of said RC circuit and a GND pin connected to one end of the capacitor of said RC circuit.

17. The H-bridge driver of claim 14, wherein said connection pins include IN1 and IN2 pins coupled to the respective control electrodes of said first and second high side MOSFETs, a V_{cc} pin and a GND pin connected to said power

input terminals, and an M1 and M2 pins connected to said first and second nodes respectively.

18. The H-bridge driver of claim 17, wherein said connection pins include a V_{RC} pin connected to one end of the resistor of said RC circuit, an SS pin connected to the node between the resistor and capacitor of said RC circuit and a GND pin connected to one end of the capacitor of said RC circuit.

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